UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,916	11/28/2001	Huub Van Aert	27500-14	1168

7590 05/28/2004

Joseph T. Guy Ph.D
Nexsen Pruet Jacobs & Pollard LLP
201 W. McBee Avenue
Greenville, SC 29603

EXAMINER	
ZALUKAEVA, TATYANA	
ART UNIT	**PAPER NUMBER**
1713	

DATE MAILED: 05/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/995,916	AERT ET AL.	
	Examiner	Art Unit	
	Tatyana Zalukaeva	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-5,13,16,18 and 21-23* is/are pending in the application.

4a) Of the above claim(s) *26, 30-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-5,13,16,18 and 21-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claim 13 has been amended to introduce the limitation that " concentration below twice its critical micelle concentration of at least 0.05% (compare to ***0.5% previously claimed)*** , by weight, versus said monomer..."

2. Claims 3, 5, 13, 16-18, 21-23, 25, are examined on the merits. Claims 26, 30-35 are withdrawn from consideration.

3. It is noted that the concentration "at least 0.05 reads on any concentration starting from 0.05 and theoretically up to a 100%.

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 3-5, 13, 16,18, 21-23 and 25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al (U.S. 5,525,670) in view of "Polymer Chemistry" by Raymond B. Seymour et al, second edition, pages 337-339.

Nishi discloses a coating composition comprising an acrylic resin particles as component (D) (col.6, lines 45-47). This component is made by emulsion polymerization of monomers (I) and (II) in water (col. 8, lines 12). The list of monomers suitable as monomer (I) is presented in col. 6, lines 65-67 and col. 7, lines 1-4. The list of monomer (II) is given in col.7, lines 10-31. The monomers of the instant claims 22 and 23 are clearly named by Nishi.

Nishi further teaches that anionic cationic or nonionic surfactant having a methacryloyl group or allyl group is used (col. 8, lines 39-49, especially lines 48, 49).

Nishi further teaches that molecular weight can be adjusted using mercaptan compounds or other compounds, **such as α-methylstyrene dimer as a chain transfer agent.** (col. 8, lines 49-52).

With regard to the concentration of surfactant, Nishi provides an example of emulsion polymerization in col. 16, wherein 5.6 parts of RA-1022 (surfactant) were used in a load comprising approximately 100 parts of monomers (see examples 12 and 13). This provides the concentration of surfactant as instantly claimed. This is a concentration that is readable on "at least 0.05% versus said monomer"

Although Nishi discloses the concentrations and the presence of components as instantly claimed, he does not specifically indicate that the concentration of surfactant is below twice its critical micelle concentration. It is noted here that such limitation can also be read as a zero concentration. However, Seymour in the book provides the theoretical basis of emulsion polymerization. In a typical recipe suitable **for any type** of emulsion polymerization, the amounts are 100 g of monomer, such as styrene, 180 g of water, **5 g of sodium stearate (soap)** and 0.5 g of potassium persulfate (page 337, 4-th paragraph)

The book further provides rationale why the concentration of surfactant should be below critical micelle concentration (page 337 and 339).

Since from the statistical view point only one half of micelles will contain growing chains at one time, and therefore, a person skilled in the art of emulsion polymerization at the time the invention was made would have found it obvious that the concentration as used by Nishi and as taught by Seymour is adjusted as a concentration lower than

twice CMC (critical micelle concentration) in order to maintain balance between the rate of polymerization and conversion with the reasonable expectation of success.

6. Claims 3-5, 13, 16,18, 21-23 and 25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Obayashi et al (U.S.6,048,924)

Obayashi discloses a water born resin (B) as a part of a composition (abstract) obtained by emulsion polymerization (col. 2, lines 60-62). Representative examples of vinyl monomers for emulsion polymerization are acrylic, methacrylic acid, maleic, fumaric and the like (col. 8, lines 58-61), also derivatives of (meth)acrylic acid (col. 9, lines 5-11 and 15-25), as well as aromatic vinyl compounds (col. 9, lines 25,26) and vinyl carboxylates (col. 9, lines 33-35). Usually the polymer is prepared by emulsion polymerization , wherein in order to control molecular weight dimer chain transfer agents are used, such as **alpha-methylstyrene dimer** and the like. (col. 12, lines 17-20), and all possible surfactants, including those anionic, nonionic, and cationic are used (col. 12, lines 33-40). Of special interest are so called reactive surfactants, having unsaturated double bonds (col. 12, lines 41-43). The amount of surfactant is usually 0.2-10 parts per 100 parts of unsaturated monomers (col. 12, lines 44-48). In examples of Table 5 in col. 26, the concentrations of surfactant are within the ranges as instantly claimed.

Obayashi discloses emulsion polymerization of identical monomers, and suggests all possibilities of dimer chain transfer agents, as instantly claimed, as well as surfactants of the nature and in the amount as instantly claimed. Obayashi does not

present an embodiment wherein all conditions are met at once. However, a person skilled in the art based on generic teaching of Obyashi and guided by a knowledge available to those skilled in the art would have found it obvious, motivated by clear suggestion of Obayashi to include the dimer chain transfer agent, as taught by Obyashi in one of his embodiments in order to regulate molecular weight of obtained polymers depending on desired properties, and thus to arrive at the instant claims.

Response to Arguments

7. Applicant's arguments filed 03/08/2004 have been fully considered but they are not persuasive. The crux of Applicants' argument is that Seymour teaches surfactant concentrations of sodium stearate which are approximately 5 grams of surfactant for 180 grams of water which is about 2.78%, by weight, versus the water. Based on the CMC of sodium stearate of about 0.024/100 g of water the concentration taught in Seymour is at least 100 times the CMC. Therefore, according to Applicants, Seymour clearly teaches a much higher concentration than set forth in the pending claims. This is not found persuasive, because the reference to Seymour was not applied to remedy the deficiencies of Nishi (Nishi does not teach anything different from the instant claims, but Nishi just does not specify the relationship between the surfactant amount and micelle concentration), but only to provide rationale why the concentration of surfactant should be below critical micelle concentration (page 337 and 339). From the statistical view point during polymerization only one half of micelles will contain growing chains at one time, and therefore, a person skilled in the art of emulsion

polymerization at the time the invention was made would have found it obvious that the concentration as used by Nishi and as taught by Seymour is adjusted as a concentration lower than twice CMC (critical micelle concentration) in order to maintain balance between the rate of polymerization and conversion with the reasonable expectation of success.

With regard to rejection over Obayashi reference, Applicants arguments reside in contention that since Obayashi teaches using 300 parts monomer, 6 parts surfactant and 450 parts of water, then the surfactant concentration is therefore about 1.3 wt%, based on water, and about 2 % based on monomer. Therefore, Obayashi teaches over 13 times the CMC compare to the instant claims. This is not persuasive because the amount of surfactant taught by Obayashi is usually 0.2-10 parts per 100 parts of unsaturated monomers (col. 12, lines 44-48). While reading the instant claim 13, the clause "...wherein said surfactant is present in a concentration below twice its critical micelle concentration **<u>of at least 0.05% by weight, versus said monomer</u>** (emphasis added-T.Z.)..." a) it is not defined that critical micelle concentration is versus water, not versus total water and monomer and b) construction of phrase "of at least 0.05% by weight versus said monomer" self explains that if this concentration is achieved, it is just the one below twice of CMC.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tatyana Zalukaeva whose telephone number is (571) 272-1115. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tatyana Zalukaeva
Primary Examiner
Art Unit 1713

May 25, 2004